

Patent claims

- 5 1. Nickel hydroxide comprising a cobalt(II) hydroxide coating which is stable to oxidation, the pastel green colour of which does not change during storage in the atmosphere for 4 weeks.
- 10 2. Nickel hydroxide comprising a cobalt hydroxide coating which is stable to oxidation, the content of cobalt in the 3-valent oxidation level increasing by less than 0.5%, based on the total cobalt content, after storage in air for at least 4 weeks.
- 15 3. Nickel hydroxide with a cobalt hydroxide coating which is stable to oxidation, the coating comprising 1 to 200 mmol of one or more anions of weak inorganic oxygen acids per mol of cobalt(II) hydroxide.
- 20 4. Nickel hydroxide according to claim 3, wherein the anion is CO_3 .
5. Nickel hydroxide according to one of claims 1 to 4 in the form of powder with an average particle size (D50 value, measured by the Mastersizer method) of 0.5 to 500 μm .
- 25 6. Nickel hydroxide according to one of claims 1 to 5 in the form of the coating on a substrate.
7. Nickel hydroxide according to one of claims 1 to 6, comprising one or more doping elements from the group consisting of Mg, Ca, Sr, Sc, Y, La, lanthanoids, Ti, Zr, Cr, Mo, W, Mn, Fe, Co, Cu, Zn, Cd, B, Al, Ga, In, Si, P, As, Sb and Bi in amounts of 0.2 to 25 wt.% in total.
- 30 8. Nickel hydroxide according to one of claims 1 to 7, comprising water molecules at interstitial sites in an amount of up to 10 wt.%.

FOOTNOTES

9. Process for the preparation of nickel hydroxide according to one of claims 1 to 8, characterized in that optionally doped nickel hydroxide provided with a cobalt hydroxide coating is treated with a weak inorganic oxygen acid from the group consisting of aluminate, borate, carbonate, chromate, manganate, molybdate, niobate, phosphate, silicate, tantalate, vanadate and tungstate or oxalate or alkali metal salts thereof.
10. Process according to claim 9, characterized in that the treatment is carried out in an aqueous solution of alkali metal carbonate and/or alkali metal bicarbonate.
11. Process according to one of claims 9 to 10, characterized in that the stabilizing treatment is carried out in the original precipitation suspension of the coating process or after prior removal of the mother liquor of the original precipitation suspension and subsequent resuspending in water.
12. Process according to one of claims 9 and 11, characterized in that the stabilizing treatment is carried out directly after filtration of the mother liquor of the original precipitation suspension of the coating process, by treatment of the unwashed or washed filter cake.
13. Process according to one of claims 9 to 12, characterized in that the stabilizing treatment is carried out by carbonation of the surface of the nickel hydroxide coated with cobalt(II) hydroxide.
14. Process according to claim 13, characterized in that the carbonation is carried out by addition of alkali metal carbonate and/or alkali metal bicarbonate solutions at concentrations of 0.01 mol/l up to the solubility maximum, preferably 0.03 - 0.1 mol/l.
15. Process according to claim 14, characterized in that the amount of alkali metal carbonate solution and/or alkali metal bicarbonate solution is 0.1-10

times the weight, based on the solids content of the suspension comprising the nickel hydroxide coated with cobalt(II) hydroxide.

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16. Process according to claim 13, characterized in that the carbonation is carried out by addition of carbon dioxide.
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17. Process according to one of claims 9 to 16, characterized in that the stabilizing treatment is carried out at a temperature of 0-100°C, preferably 20-60°C, and particularly preferably 40-50°C.
18. Process according to one of claims 9 to 17, characterized in that the nickel hydroxide coated with stabilized cobalt(II) hydroxide is washed before the final drying step.
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19. Process according to one of claims 9 to 18, characterized in that drying of the nickel hydroxide coated with stabilized cobalt(II) hydroxide is carried out without exclusion of air.
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20. Process according to claim 13, characterized in that the carbonation is carried out by treatment of the moist filter cake, comprising the nickel hydroxide coated with cobalt(II) hydroxide, in carbon dioxide or carbon dioxide-containing air under CO₂ partial pressures of 0.01 to 2 bar, preferably 0.01 to 0.1 bar, preferably with simultaneous drying in continuously operated spray dryers or spin flash dryers.
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21. Use of the doped or non-doped nickel hydroxide coated with stabilized cobalt(II) hydroxide, according to one of claims 1 to 20, as an electrode material in secondary batteries.

App A, >